the whole country. Throughout this period there was no part of England in which the temperature was not above the average in each week, as shown by the returns issued by the Meteorological Office.

The persistent low temperature which preceded this warm weather, and which had so long continued, was described in NATURE for August 12 (p. 341). This cool weather continued till August 23, when, fortunately, the conditions entirely changed, and a warm spell of exceptional length for either summer or early autumn set in. It is necessary to go back to February 1885, eighteen months ago, before we find so long a period with the temperature above the average, and since that time there have not even been two weeks in succession which were warm generally over the whole country.

In recent years there has been but very little really settled warm weather during the three months July to September. Last year there was only one week, ending July 27, which could in any way be termed warm generally over the country during the whole period of three months. In 1884 finer weather was experienced, and there were four consecutive weeks, ending August 25, with the temperature above the average over Great Britain; there was also a period of three consecutive weeks, ending September 29, with warm weather, and two consecutive weeks ending July 14. In 1883 there was only one week, ending September 24, in which the temperature was above the average over the whole of the British Islands, but there were other weeks during the three months in which the temperature was high in several districts; there was, however, no continuous warm weather. In 1882 the week ending August 14 was the only instance with the temperature generally above the average, and in this period a deficiency was shown in the East of England. In 1881 there was not a single week in the three months with the temperature generally above the average. In 1880 there were five consecutive weeks, ending September 13, with the temperature above the normal value, and warm weather was also enjoyed in the week ending September 27. In 1879 temperature was continuously low throughout the period, and the deficiency generally amounted to several degrees; there was not a single district over the whole of the United Kingdom with the temperature above the mean for a single week.

From this it is seen that during the last eight years there were but two years, 1880 and 1884, which can in any way compare with this year for warm weather during the three months referred to, and in the remaining five years there was not a longer period than a single week with continuous warm weather.

The varying conditions with which warm weather occurs in England is exceedingly puzzling. This year it has accompanied weather of a cyclonic type, and has changed to cooler weather with the anticyclonic conditions which set in about September 14. To attempt an explanation of these conditions from observations for our own limited area, or even from the observations over Europe, would be but labour lost. For such an inquiry it is necessary to wait the issue of the synoptic charts for the northern hemisphere which are compiled by the United States Signal Service from the international synchronous meteorological observations. Doubtless a careful study of these will throw some light on the cause of the prolonged irregularities in the distribution of temperature.

CHAS. HARDING

NOTES

THE American Association at the Buffalo meeting unanimously passed a resolution expressing its gratification at hearing of Dr. Gould's proposed revival of the *Astronomical Journal*, and its good wishes for its success.

MR. G. T. PRIOR, B.A. of Magdalen College, Oxford, has been appointed an Assistant in the Department of Mineralogy in the British Museum, to fill the vacancy caused by the death of Dr. Flight. The two vacancies in the staff of the Zoological Department occasioned by the resignation of Mr. E. J. Miers on account of ill-health, and Mr. J. J. Quelch, appointed to the curatorship of the Demerara Museum, have been filled by the nomination after competitive examination of Mr. C. J. Gahan and Mr. Randolph Kirkpatrick. Mr. C. G. Crick has lately been appointed an additional assistant in the Department of Zoology.

WE regret to learn of the death of Dr. Clement Mansfield Ingleby, at the age of sixty-three years. The death is also announced of Admiral Bedford Pim.

WE regret to note the death of Prof. H. A. Bayne, Ph.D., of the Royal Military College, Kingston, Ontario, Canada. Dr. Bayne was a native of Nova Scotia. He graduated in Arts at Dalhousie College, Halifax, N.S., and afterwards spent five years in the special study of chemistry under Wiedemann at Leipzig, Bunsen at Heidelberg, and Dumas at Paris, taking his Doctor's degree at Heidelberg. Returning to his native land he first engaged in organising the Scientific Department of the Halifax High School, acting at the same time as Lecturer on Chemical Analysis at Dalhousie College. In 1879 he was appointed Professor of Chemistry at the Kingston Military College, which had just been founded. His work at Kingston was very onerous, and during the first few years of his professoriate he found little time for original research. At the last meeting of the Royal Society of Canada, of which he was a Fellow, he read a paper of practical value on chemical tests of the purity of silk. He had begun in Germany a series of experiments on the properties of certain of the rarer metals, in which he had been interested by Bunsen; and he hoped to continue them when leisure came. But he has been cut down at the very threshold of his work.

THE annual Exhibition of the Photographic Society was opened to the public on Monday.

NEWS of earthquakes and volcanic eruptions continues to arrive from all quarters. The North American earthquakes have not ceased. Three slight shocks were felt in Summerville on September 28, and at night several more occurred. From various parts of Central Germany, principally Thuringia, news arrives showing that in the night of the 27th, or morning of the 28th ult., there was a series of more or less violent shocks of earthquake. At Gera and other places in Thuringia, the windows, doors, cupboards, and other movable articles of furniture, were violently agitated, shaking and rocking to and fro. A despatch received at New York on Tuesday from Mexico states that a high hill in the vicinity of Chimalapa has been completely riven in two by the action of subterranean forces. The volcano of Colima, in Mexico, is in a state of eruption for the third time within a year. Information has been received at Lerwick stating that two shocks of earthquake had been experienced at Baltasno, Unst, Shetlands, on Monday night. The first shock was felt at eleven, the other two hours later. Several people were roused from sleep by houses trembling and china rattling. Both shocks lasted several seconds, but no damage occurred to property. A telegram from Melbourne, October 5, states that a volcanic eruption has occurred in the island of Niapu, in the Tonga group. Two-thirds of the island are completely covered with volcanic dust. Mount Pabloff, 300 miles south of Kodiak, in Alaska, is in eruption.

MR. S. K. SEKIYA writes from the Imperial University, Tokio, Japan:—"On July 23 quite a destructive earthquake visited Shinano, Echigo, and the neighbouring provinces, overthrowing several houses, forming fissures on roads and hill-sides, and causing severe damage to household property. The shock also stopped the flow of a hot spring at Nozawa. The part most severely shaken lies among the mountainous district some 3000 feet above the sea, with the famous active volcano of Asama, besides many extinct ones—an interesting case in Japan, as most of the larger earthquakes extend along the sea-shores."

A RECENT number of the *Japan Weekly Mail* contains a short account of a night ascent of the active volcano Asamayama. The party left Karnisawa in the afternoon, and commenced the ascent from the eastern side about sunset. The sky was perfectly clear, and the summit was reached an hour before midnight. The wind, blowing from the south, carried the sulphurous vapour away to the northwards, and thus the ascent was made less uncomfortable. The party saw quite to the bottom of the crater, which presented the appearance of a furnace filled with glowing coals. The sound of the roaring, hissing, and bubbling is described as loud and awful. The walls of the crater are of a light-brown colour, and are composed of successive layers marked out with striking regularity like the seats in an amphitheatre. Allowing ten of these layers to each interval of 20 feet, the depth from the surface to the incandescent matter would appear to be 200 feet. The periphery of the crater is about half a mile, although the Japanese calculate it at two miles and a half.

MR. PERCY SMITH, Assistant Surveyor-General of New Zealand, has made an ascent of Tarawera, where the eruption recently took place. He found the mountain split across, the crack in some places being 5 chains wide. Mr. Smith is now making a minute examination of the district.

ACCORDING to intelligence received at Hamburg, advices from the waters of Spitzbergen now confirm the former news from Iceland and from the mouth of the Pechora, on the Siberian coast, to the effect that the ice in the Arctic Sea has this year extended unusually far southwards. Spitzbergen, the sealers report, was found to be surrounded with an ice-belt 5 to 8 miles broad, and there was firm pack ice from Hope Island to Forland, about 56 miles. The great bays on the Storfjord, Hornsund, Bellsund, and Isfjord were quite inaccessible, and the sealers, after waiting all the spring and most of the summer, returned at the end of August, as there was no prospect of the Polar ice dividing.

PROF. ALEXANDER, who has filled the Chair of Engineering at the Imperial College of Engineering, Tokio, for a number of years past, and who is about to leave the country, has been presented by his colleagues, past and present, with a handsome pair of bronze vases, inlaid with silver, and with an address. The graduates of the college on the same occasion presented him with four pieces of Japanese bronze work. The documents accompanying these presents show that the retiring Professor is much regretted by those whom he leaves behind—colleagues as well as pupils.

ACCORDING to the Report of the Superintendent of the Government Museum at Madras for the past year, the interest of the people in that institution is on the increase. The number of visitors is considerably larger, this being especially noticeable in the case of women and girls, which probably indicates some relaxation of the custom of seclusion, and an increasing interest on the part of Indian women in things beyond, and different from, their ordinary duties. In the work of the Museum there seems to have been an advance in almost every direction. The materials for catalogues of the departments of ethnology and antiquities were collected. Mr. Davison, the well-known Indian ornithologist, was engaged at the suggestion of the Governor for a period of six months to make a collection of South Indian birds for the Museum, and when this has been done a catalogue of the birds will be taken in hand. Similarly in other departments the work of the institution has been progressing. The Superintendent notes that the native visitors object to the drinking-fountain in the grounds, owing to the resemblance that the discharge of water from the mouth of a stoneware lion's head has to the act of vomiting!

THE total railway mileage of the United States is now 130,334, of which 12,116, or 9·2 per cent., is narrow gauge, and 187 broad gauge (5 feet and over). In view of the numerous breaks of gauge, transfer-apparatus enabling quick and easy change under car-bodies of trucks made for one gauge to trucks made for another is a desideratum. A committee of the Franklin Institute has just highly commended Ramsay's system for the purpose. In this, when, *e.g.*, a broad-gauge car is to be transferred to a narrow-gauge line, the car is brought with the aid of side trucks and cross bars over a depressed piece of line having both gauges, and an inclined approach and exit; and it there exchanges one kind of truck for the other. It may be noted that the narrow-gauge system in the United States, far from having "seen its best days," is constantly resorted to in the development of mountainous and sparsely populated districts, California taking the lead in this respect.

WE learn from a French source that Prof. Place, of the Cavalry School of Saumur, has recently applied electricity with great success to horses which prove refractory while being shod. It is known that a vicious beast will often give much trouble in the operation of shoeing, and may even have to be bound and made to lie down. M. Place's method renders it at once tractable, and permanently cures its aversion to the forge. The electric shock is given through a bridle of special form, from an induction-coil actuated by a dry pile.

THE effect of muscular exercise on the temperature of the body has been recently engaging the attention of M. Mosso in Italy. In thermometrical relations the nerves, he concludes, have much greater action than the muscles. Strong emotion will raise the rectal temperature of a dog 0°·5 to 2°, and the same with man. Pain has the same effect. During a walk of two days, M. Mosso observed that his temperature was not in proportion to the work done by his muscles. When dogs rest after long fatigue, one observes that their heat sinks below the normal level, though their muscular exertion has been great. Again, take the evidence of strychnine and curare; the former of which affects the nerve-centres, while the latter paralyses the muscular system. A frog poisoned with curare falls into complete paralysis, with lowering of heat. If a few milligrammes of strychnine be then injected, the paralysis does not cease, but the temperature immediately rises. Internal temperature, then, seems to depend chiefly on the nerve-centres and their greater or less excitation.

WE have received the "Proceedings and Addresses" at the Sanitary Convention held in March last in Howell, Michigan, under the direction of the State Board of Health. The various papers are of a very plain and practical character, free for the most part from technicalities. We have read with especial interest, in view of recent discussions in this country, Prof. Barnes's address on the sanitary conditions and needs of American schools. Speaking of the complaint in England that owing to the requirements of the present code the children of the very poor whose food is bad and insufficient become afflicted with sundry dangerous nervous disorders, Prof. Barnes says that if this be true for England, it certainly is not for the United States. But there as well as here there are critics who hold the system of education to be responsible for all the ills of youth. Prof. Barnes shows that this is absurd. Adequate heating and ventilation he regards as the chief respects in which American schools are lacking. Indeed it appears from the papers that the other public buildings of the State of Michigan share these defects with the schools; the court-house, according to Mr. Waters, is little better than a death-trap, and the others are far from being what they should be.

WE have received the *Report and Proceedings* (vol. i. part 1) of the Bristol Naturalists' Society. The former is very satisfactory, as it shows an increase in the membership and an increased attendance at the meetings. The finances, too, are in a sound state, with the exception of the special library fund, which appears to be in debt. The Council urge the formation of similar Societies in neighbouring towns, and their affiliation to the Bristol Society, "for so much can be done for science by mutual intercourse and encouragement." The contents of the *Proceedings* (the part being profusely illustrated) reach a high standard. Prof. Lloyd Morgan publishes the third and fourth parts of his "Contributions to the Geology of the Avon Basin," dealing with the Portbury, Clapton, and Portishead districts. Mr. Wilson, Curator of the Bristol Museum, gives the history of the exploration of the bone-cave or fissure in Durdham Down, from which the series of mammalian remains in the Bristol Museum were obtained. Lists are given of the remains found, and of the principal publications referring to them. Mr. Bucknall publishes Part 9 of his "Fungi of the Bristol District," while Mr. Griffiths writes on the *Cicada septemdecim*, "the seventeen-years' locust" of America. There are several other more general papers. At the end is the continuation of the "Flora of the Bristol Coal-Field," edited for the Society by Mr. J. W. White, the compilation of which was commenced seven years ago, and which has continued steadily ever since. One thousand and three species have already been treated as inhabitants of the district. The present part, which is the sixth, treats of *Glumiferæ Gymnospermæ* and *Cryptogameæ Vasculares.* It is proposed to begin at once revising the earlier parts with a view to the preparation of a second edition, and an appeal is made to members and friends to aid in making the work as complete and accurate as possible. It is hoped in this way to lay before the Society a thoroughly worthy account of the botanical wealth of Bristol.

THE Otago Acclimatisation Society have, during the past year, been highly successful in their fish-culture operations in New Zealand. The utmost is being done to naturalise Salmonidæ to the waters of that country, and from all accounts the experiment is likely to succeed. The Society are about to try the experiment of retaining salmon in fresh waters at Marshall's Creek with a view to testing the assertion that it is not a physiological necessity for fish to repair to the sea to render them capable of reproduction.

NEWCASTLE-UPON-TYNE Free Library, though suffering from a fire which arose from the flue of a sunlight in the reference room getting overheated, and caused both reference and issue department to be closed for many days, nevertheless records general prosperity, boasting at the same time the issue of the smallest percentage of fiction of twelve of the largest free libraries in England. A new catalogue of 10,000 books added to the lending department during the five years and a half the library has been open, and another of the juvenile department, are being prepared to meet the want that must be so urgent in a library where crowded applicants can gain knowledge of the treasures offered them by no other channel. Only thirteen volumes, not worth 1*l.*, have been lost during the same length of time, not reaching 1 in 100,000 issues; in the juvenile department only 1 in 185,000; and during the past year not one volume! Yet, as if this were not satisfactory, the Committee have decided to make every borrower (*i.e.* over 8500 persons) renew his ticket yearly, instead of once in five years, for the sake of correcting addresses. Balancing this enormous aggregate of trouble to the public, *plus* that of the library officials in carrying it out, against that of the latter in tracing borrowers who have removed without signifying the same to them, we cannot think that this shows either the wisdom of the serpent or the harmlessness of the dove! Science and other educational classes, so aptly carried on under a free library committee, were attended by 141 students in 1884–85, and, we are glad to see, by 186 in 1885–86. Three branch reading-rooms, however, we note with surprise, were not attended sufficiently to make it worth the expense of keeping them open.

THE intelligent community of Watford, to whose various clubs and classes, all working together under one committee, we called attention some time ago, find co-operation so successful that they have published a bound hand-book of 160 pages, containing, besides a library catalogue with supplementary lists down to September 1886, all the other varied information which they have to lay before the public. The principal item to notice is that they have succeeded in adding the University Extension lectures to the numerous branches of art and science already under their care. The name of "The Free Library 'College' of Science, Art, Music, and Literature" has now been adopted, as denoting the "collection" of schools of which it consists. Sir John Lubbock has accepted the new office of President of it, and on Tuesday, the 28th ult., he delivered an opening address. He chose the subject of ants and their ways; and, since natural history is among the scientific pursuits of the college, it was both a specially fitting and, we need not add, a generally interesting subject. The nucleus of all the various work carried on at Watford is a free library rate which even now only brings in 240*l.* a year. Such success should therefore encourage such smaller towns as cannot find separate committees each with its own work and expenditure also.

AMONGST the papers read at the International Congress of Orientalists at Vienna were one by Dr. Stein on the Hindu Kush and Pamir in Iranian geography, and one by Prof. Kuhn on the Indian dialects spoken in the Hindu Kush. Prof. de Lacouperie also read a paper on the aboriginal languages of China.

MESSRS. SPON have in the press: "Metal Plate Work, its Patterns and their Geometry," by C. T. Millis, M.I.M.E.; "A Practical Hand-Book on Pump Construction," by Philip R. Björling; "Spons' Mechanics' Own Book" (second edition); "Quantity Surveying," by J. Leaning (second edition, revised and enlarged); "A Treatise on Secondary Batteries," by Prof. Silvanus P. Thompson, D.Sc., B.A.

THE additions to the Zoological Society's Gardens during the past week include a Mona Monkey (*Cercopithecus mona*) from West Africa, presented by Mr. W. P. Hewby; a Malbrouck Monkey (*Cercopithecus cynosurus*) from East Africa, presented by Mr. Lionel R. Crawshay; a Rough Fox (*Canis rudis*) from British Guiana, presented by Capt. J. Smith; a Hairy-rumped Agouti (*Dasyprocta prymnolopha*) from Guiana, presented by Mrs. Otto Fell; a Common Hedgehog (*Erinaceus europæus*) British, presented by Madame Tina Mazzoni; two Moorhens (*Gallinula chloropus*), British, presented by Lord Moreton, F.Z.S.; a Horned Viper (*Viper cornuta*) from South Africa, presented by Mr. C. B. Pillans.

OUR ASTRONOMICAL COLUMN

PERSONAL EQUATION IN OBSERVATIONS OF DOUBLE STARS. —M. Bigourdan, of the Paris Observatory, has taken the above as the subject of his Thesis for the degree of Doctor of Physical Science. In an historical review of the subject he refers to the labours of Dawes, W. Struve, O. Struve, Dunér, O. Stone, F. R. Helmert, and T. N. Thielo. He dwells particularly on the researches of